

What is claimed is:

1. A process for making neutral or anionic complexes containing sequestered DNA for gene transfer, comprising:

forming a stable colloid comprising an aqueous phase having suspended therein a first DNA complex with a cationic surface potential comprising a DNA sequence complexed with a cationic lipid or polymer; and

modifying the surface potential of said first DNA complex to form a stable colloid comprising a second DNA complex with a neutral or net anionic surface potential.

2. The process of claim 1, wherein the surface potential of said first DNA complex is modified by adding a poly(alkylene oxide) to the aqueous phase of said colloid.

3. The process of claim 2, wherein said poly(alkylene oxide) is polyethylene glycol.

4. The process of claim 1, wherein the surface potential of said first DNA complex is modified by the covalent attachment of poly(alkylene oxides) to the cationic lipid or polymer.

5. The process of claim 4, wherein said poly(alkylene oxide) is polyethylene glycol.

6. The process of claim 1, wherein said first DNA complex is a complex of a DNA sequence with a cationic lipid or polymer comprising one or more cationic head groups, and said first DNA complex is modified by reacting said cationic head groups with a reagent that reacts with the cationic head group to neutralize the positive charge thereon.

7. The process of claim 6, wherein said cationic lipid or polymer is selected from the group consisting of linear polyamines, branched polyamines and polyamines comprising guanidinium groups.

8. The process of claim 6, wherein said reagent is citraconic anhydride or N-hydroxysuccinimide acetate.

9. The process of claim 6, wherein reagent is an N-hydroxysuccinimide ester of a targeting ligand, so that a targeting ligand is covalently attached to said cationic lipid or polymer that also modifies the surface potential of said first DNA complex.

10. The process of claim 9, wherein said targeting ligand is an amino sugar or peptide.

11. The process of claim 1, wherein said first DNA complex further comprises a targeting ligand covalently attached to said cationic lipid or polymer.

12. The process of claim 4, wherein said poly(alkylene oxide) is only covalently attached to cationic lipids or polymers on the surface of said first DNA complex.

13. The process of claim 4, wherein said poly(alkylene oxide) is covalently attached to cationic lipids or polymers on the surface of and in the interior of said first DNA complex.

14. The process of claim 6, wherein said reagent is only reacted with cationic head groups of cationic lipids or polymers on the surface of said first DNA complex.

15. The process of claim 6, wherein said reagent is reacted with cationic head groups of cationic lipids or polymers on the surface of and in the interior of said first DNA complex.

16. A stable colloid comprising an aqueous phase having suspended therein a first DNA complex with a cationic surface potential comprising an exogenous therapeutic DNA sequence for delivery in vivo to a patient in need thereof, complexed with a cationic lipid or polymer, wherein said aqueous phase comprises an aqueous solution of a poly(alkylene oxide).

17. A stable colloid comprising an aqueous phase having suspended therein a first DNA complex with a cationic surface potential comprising an exogenous therapeutic DNA sequence for delivery in vivo to a patient in need thereof, complexed with a cationic lipid or polymer, wherein said surface potential of said first DNA complex is modified by the covalent attachment of poly(alkylene oxides) to the cationic lipid or polymer.

18. A stable colloid comprising an aqueous phase having suspended therein a first DNA complex with a cationic surface potential comprising an exogenous therapeutic DNA sequence for delivery in vivo to a patient in need thereof, complexed with a cationic lipid or polymer comprising one or more cationic head groups modified by reaction with a reagent that neutralizes the positive charge thereon.

19. A method for gene therapy by delivering in vivo an exogenous therapeutic DNA sequence to a patient in need thereof comprising administering to said patient an effective amount of the colloid of claim 16, 17 or 18.